CRF Errors Edited by the STIC Systems Branch

Serial Number: __10/706,435A__   CRF Edit Date: __9/29/04__
Edited by: _____

ENTERED

____ Realigned nucleic acid/amino acid numbers/text in cases where the sequence text "wrapped" to the next line.
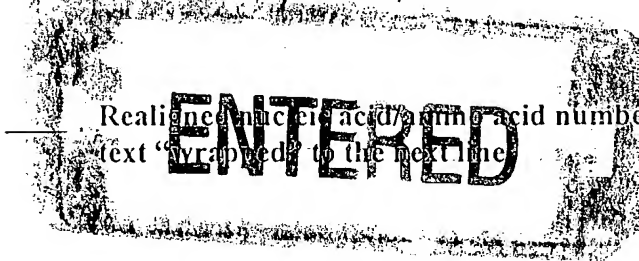
____ Corrected the SEQ ID NO. Sequence numbers edited were:

_____

____ Inserted or corrected a nucleic number at the end of a nucleic line. SEQ ID NO's edited:

_____

____ Deleted: ____ invalid beginning/end-of-file text ; ____ page numbers

____ Inserted mandatory headings/numeric identifiers, specifically:

_____

____ Moved responses to same line as heading/numeric identifier, specifically:

_____

____ Other:
Sequence 5 - corrected amino acid numbering; inserted <220>, <223> numeric identifiers after 4th line of <223> response

Revised 09/09/2003

IFWO

RAW SEQUENCE LISTING   DATE: 09/29/2004
PATENT APPLICATION: US/10/706,435A   TIME: 11:12:57

Input Set : A:\PTO.AMC.txt
Output Set: N:\CRF4\09292004\J706435A.raw

```
 3 <110> APPLICANT: Walter Reed Army Institute of Research
 4       Lanar, David E.
 5       Hillier, Collette J.
 6       Lyon, Jeffrey A.
 7       Angov, Evelina
 8       Kumar, Sanjai
 9       Rogers, William
10       Barbosa, Arnoldo
12 <120> TITLE OF INVENTION: Expression, Purification, and Uses of a Plasmodium
13       falciparum Liver Stage Antigen 1 Polypeptide
15 <130> FILE REFERENCE: 003/285/SAP
17 <140> CURRENT APPLICATION NUMBER: 10/706,435A
19 <141> CURRENT FILING DATE: 2003-11-12
21 <150> PRIOR APPLICATION NUMBER: 60/425,719
23 <151> PRIOR FILING DATE: 2002-11-12
25 <160> NUMBER OF SEQ ID NOS: 28
27 <170> SOFTWARE: Microsoft Word XP
29 <210> SEQ ID NO: 1
30 <211> LENGTH: 17
31 <212> TYPE: PRT
32 <213> ORGANISM: P. falciparum LSA-1
33 <220> FEATURE:
34 <223> OTHER INFORMATION: LSA-1 major 17 amino acid repeat
35 <400> SEQUENCE: 1
37 Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg
38                 5                   10
39 Leu Ala Lys Glu Lys Leu Gln
40               15
42 <210> SEQ ID NO: 2
43 <211> LENGTH: 17
44 <212> TYPE: PRT
45 <213> ORGANISM: P. falciparum LSA-1
46 <220> FEATURE:
47 <223> OTHER INFORMATION: LSA-1 minor 17 amino acid repeat
48 <400> SEQUENCE: 2
50 Glu Gln Gln Arg Asp Leu Glu Gln Glu Arg
51                 5                   10
52 Leu Ala Lys Glu Lys Leu Gln
53               15
55 <210> SEQ ID NO: 3
56 <211> LENGTH: 1374
57 <212> TYPE: DNA
58 <213> ORGANISM: Artificial sequence
```

RAW SEQUENCE LISTING   DATE: 09/29/2004
PATENT APPLICATION: **US/10/706,435A**   TIME: 11:12:57

Input Set : **A:\PTO.AMC.txt**
Output Set: **N:\CRF4\09292004\J706435A.raw**

```
 59 <220> FEATURE:
 60 <223> OTHER INFORMATION: LSA-NRC(H)Mut
 61 <400> SEQUENCE: 3
 63 atgggtacca acagcgaaaa agacgaaatt atcaaaagca    40
 64 atctccgctc cggcagctcc aacagccgca accgcatcaa    80
 65 cgaggaaaag catgagaaga aacatgtgct gagccacaac   120
 66 tcctacgaga agactaaaaa caacgaaaac aacaaattct   160
 67 ttgacaagga caaagagctg acgatgagca acgttaaaaa   200
 68 cgtatcccag accaacttta aatccctcct gcgcaacctc   240
 69 ggcgtttccg agaacatctt tctcaaagaa aacaaactga   280
 70 acaaggaagg caaactgatt gaacatatca tcaacgacga   320
 71 cgatgacaaa aaaaaataca ttaaaggcca ggatgaaaat   360
 72 cgccaggaag acctcgaaga aaaagctgct gaacagcagt   400
 73 cggacctgga acaggagcgc ctcgctaaag aaaagctcca   440
 74 ggagcgcctc gctaaagaaa agctccagga gcaacagcgc   480
 75 gacctggaac agcgcaaggc tgacacgaaa aaaaacctgg   520
 76 aacgcaaaaa ggaacacggc gacgttctgg ctgaggacct   560
 77 gtacggccgc ctggaaatcc cagctatcga actcccatcc   600
 78 gaaaacgaac gcggctacta catcccacac cagagcagcc   640
 79 tgccacaaga taatcgcggg aactcccgcg acagtaagga   680
 80 aatcagcatc atcgaaaaaa ccaaccgcga aagcattacc   720
 81 accaacgtgg aaggccgccg cgacatccac aaaggccacc   760
 82 tcgaagaaaa gaaagacggc tccatcaaac cagaacagaa   800
 83 agaagacaaa agcgctgata tccagaacca caccctggag   840
 84 accgtgaaca ttagcgacgt gaacgacttc cagatcagca   880
 85 agtacgagga cgaaatctcc gctgaatacg atgactccct   920
 86 gatcgacgaa gaagaagacg acgaagatct ggatgaattc   960
 87 aaaccaattg tccagtacga taactttcag gacgaagaaa  1000
 88 atatcggcat ttacaaagaa ctcgaagacc tcatcgagaa  1040
 89 aaacgaaaac ctggacgacc tggacgaagg catcgaaaaa  1080
 90 tcctccgaag aactgagcga agaaaaaatc aaaaaaggca  1120
 91 agaaatacga aaaaaccaag gacaacaact tcaaaccaaa  1160
 92 cgacaaatcc ctctacgacg agcacattaa aaaatacaaa  1200
 93 aacgacaagc aagtgaacaa ggaaaaggaa aaatttatca  1240
 94 aatccctctt ccacatcttc gatggcgata acgaaattct  1280
 95 gcaaattgta gacgaacggt tgagcgaaga catcactaaa  1320
 96 tacttcatga agcttggggg ctccggttct ccacaccacc  1360
 97 accaccacca ctga                              1374
100 <210> SEQ ID NO: 4
101 <211> LENGTH: 457
102 <212> TYPE: PRT
103 <213> ORGANISM: Artificial sequence
104 <220> FEATURE:
105 <223> OTHER INFORMATION: LSA-NRC(H)Mut
106 <400> SEQUENCE: 4
108 Met Gly Thr Asn Ser Glu Lys Asp Glu Ile
109                 5                   10
110 Ile Lys Ser Asn Leu Arg Ser Gly Ser Ser
111                15                   20
```

RAW SEQUENCE LISTING   DATE: 09/29/2004
PATENT APPLICATION: US/10/706,435A   TIME: 11:12:57

Input Set : A:\PTO.AMC.txt
Output Set: N:\CRF4\09292004\J706435A.raw

```
112 Asn Ser Arg Asn Arg Ile Asn Glu Glu Lys
113                  25                      30
114 His Glu Lys Lys His Val Leu Ser His Asn
115                  35                      40
116 Ser Tyr Glu Lys Thr Lys Asn Asn Glu Asn
117                  45                      50
118 Asn Lys Phe Phe Asp Lys Asp Lys Glu Leu
119                  55                      60
120 Thr Met Ser Asn Val Lys Asn Val Ser Gln
121                  65                      70
122 Thr Asn Phe Lys Ser Leu Leu Arg Asn Leu
123                  75                      80
124 Gly Val Ser Glu Asn Ile Phe Leu Lys Glu
125                  85                      90
126 Asn Lys Leu Asn Lys Glu Gly Lys Leu Ile
127                  95                      100
128 Glu His Ile Ile Asn Asp Asp Asp Asp Lys
129                  105                     110
130 Lys Lys Tyr Ile Lys Gly Gln Asp Glu Asn
131                  115                     120
132 Arg Gln Glu Asp Leu Glu Glu Lys Ala Ala
133                  125                     130
134 Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg
135                  135                     140
136 Leu Ala Lys Glu Lys Leu Gln Glu Arg Leu
137                  145                     150
138 Ala Lys Glu Lys Leu Gln Glu Gln Gln Arg
139                  155                     160
140 Asp Leu Glu Gln Arg Lys Ala Asp Thr Lys
141                  165                     170
142 Lys Asn Leu Glu Arg Lys Lys Glu His Gly
143                  175                     180
144 Asp Val Leu Ala Glu Asp Leu Tyr Gly Arg
145                  185                     190
146 Leu Glu Ile Pro Ala Ile Glu Leu Pro Ser
147                  195                     200
148 Glu Asn Glu Arg Gly Tyr Tyr Ile Pro His
149                  205                     210
150 Gln Ser Ser Leu Pro Gln Asp Asn Arg Gly
151                  215                     220
152 Asn Ser Arg Asp Ser Lys Glu Ile Ser Ile
153                  225                     230
154 Ile Glu Lys Thr Asn Arg Glu Ser Ile Thr
155                  235                     240
156 Thr Asn Val Glu Gly Arg Arg Asp Ile His
157                  245                     250
158 Lys Gly His Leu Glu Glu Lys Lys Asp Gly
159                  255                     260
162 Ser Ile Lys Pro Glu Gln Lys Glu Asp Lys
```

RAW SEQUENCE LISTING   DATE: 09/29/2004
PATENT APPLICATION: US/10/706,435A   TIME: 11:12:57

Input Set : **A:\PTO.AMC.txt**
Output Set: **N:\CRF4\09292004\J706435A.raw**

```
163                    265                    270
164 Ser Ala Asp Ile Gln Asn His Thr Leu Glu
165                    275                    280
166 Thr Val Asn Ile Ser Asp Val Asn Asp Phe
167                    285                    290
168 Gln Ile Ser Lys Tyr Glu Asp Glu Ile Ser
169                    295                    300
170 Ala Glu Tyr Asp Asp Ser Leu Ile Asp Glu
171                    305                    310
172 Glu Glu Asp Asp Glu Asp Leu Asp Glu Phe
173                    315                    320
174 Lys Pro Ile Val Gln Tyr Asp Asn Phe Gln
175                    325                    330
176 Asp Glu Glu Asn Ile Gly Ile Tyr Lys Glu
177                    335                    340
178 Leu Glu Asp Leu Ile Glu Lys Asn Glu Asn
179                    345                    350
180 Leu Asp Asp Leu Asp Glu Gly Ile Glu Lys
181                    355                    360
182 Ser Ser Glu Glu Leu Ser Glu Glu Lys Ile
183                    365                    370
184 Lys Lys Gly Lys Lys Tyr Glu Lys Thr Lys
185                    375                    380
186 Asp Asn Asn Phe Lys Pro Asn Asp Lys Ser
187                    385                    390
188 Leu Tyr Asp Glu His Ile Lys Lys Tyr Lys
189                    395                    400
190 Asn Asp Lys Gln Val Asn Lys Glu Lys Glu
191                    405                    410
192 Lys Phe Ile Lys Ser Leu Phe His Ile Phe
193                    415                    420
194 Asp Gly Asp Asn Glu Ile Leu Gln Ile Val
195                    425                    430
196 Asp Glu Arg Leu Ser Glu Asp Ile Thr Lys
197                    435                    440
198 Tyr Phe Met Lys Leu Gly Gly Ser Gly Ser
199                    445                    450
200 Pro His His His His His His
201                    455
203 <210> SEQ ID NO: 5
204 <211> LENGTH: 17
205 <212> TYPE: PRT
206 <213> ORGANISM: Artificial sequence
207 <220> FEATURE:
208 <223> OTHER INFORMATION: LSA-1 Consensus sequence of 17 amino acid repeats
209       where Xaa at position 1 is either Glu or Gly; Xaa at
210       position 4 is Ser or Arg; Xaa at position 6 is Asp or Ser;
211       Xaa at position 9 is Glu or Asp; Xaa at position 11 is Leu
212 <220> FEATURE:
```

```
     213 <223> OTHER INFORMATION: or Arg; Xaa at position 13 is Lys or Asn and Xaa at position
     214      15 is Lys or Thr or Arg.
     216 <400> SEQUENCE: 5
W--> 217 Xaa Gln Gln Xaa Asp Xaa Glu Gln Xaa Arg
     218               5           10
     220 Xaa Ala Xaa Glu Xaa Leu Gln
     221           15
     223 <210> SEQ ID NO: 6
     224 <211> LENGTH: 24
     225 <212> TYPE: PRT
     226 <213> ORGANISM: P. falciparum LSA-1
     227 <220> FEATURE:
     228 <223> OTHER INFORMATION: P. falciparum LSA-1 T1 epitope
     229 <400> SEQUENCE: 6
     230 Leu Thr Met Ser Asn Val Lys Asn Val Ser
     231               5           10
     232 Gln Thr Asn Phe Lys Ser Leu Leu Arg Asn
     233               15          20
     234 Leu Gly Val Ser
     236 <210> SEQ ID NO: 7
     237 <211> LENGTH: 17
     238 <212> TYPE: PRT
     239 <213> ORGANISM: P. falciparum LSA-1
     240 <220> FEATURE:
     241 <223> OTHER INFORMATION: P. falciparum LSA-1 LSA-Rep epitope
     242 <400> SEQUENCE: 7
     243 Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg
     244               5           10
     245 Leu Ala Lys Glu Lys Leu Gln
     246           15
     248 <210> SEQ ID NO: 8
     249 <211> LENGTH: 17
     250 <212> TYPE: PRT
     251 <213> ORGANISM: P. falciparum LSA-1
     252 <220> FEATURE:
     253 <223> OTHER INFORMATION: P. falciparum LSA-1 J epitope
     254 <400> SEQUENCE: 8
     255 Glu Arg Leu Ala Lys Glu Lys Leu Gln Glu
     256               5           10
     257 Gln Gln Arg Asp Leu Glu Gln
     258           15
     260 <210> SEQ ID NO: 9
     261 <211> LENGTH: 20
     262 <212> TYPE: PRT
     263 <213> ORGANISM: P. falciparum LSA-1
     264 <220> FEATURE:
     265 <223> OTHER INFORMATION: P. falciparum LSA-1 NR epitope
     266 <400> SEQUENCE: 9
     269 Thr Lys Lys Asn Leu Glu Arg Lys Lys Glu
```

RAW SEQUENCE LISTING ERROR SUMMARY   DATE: 09/29/2004
PATENT APPLICATION: US/10/706,435A   TIME: 11:12:58

Input Set : A:\PTO.AMC.txt
Output Set: N:\CRF4\09292004\J706435A.raw

Please Note:
Use of n and/or Xaa have been detected in the Sequence Listing. Please review the
Sequence Listing to ensure that a corresponding explanation is presented in the <220>
to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:5; Xaa Pos. 1,4,6,9,11,13,15

IFWO

RAW SEQUENCE LISTING   DATE: 09/27/2004
PATENT APPLICATION: US/10/706,435A   TIME: 11:39:09

Input Set : A:\PTO.LM.txt
Output Set: N:\CRF4\09272004\J706435A.raw

```
 3 <110> APPLICANT: Walter Reed Army Institute of Research
 4         Lanar, David E.
 5         Hillier, Collette J.
 6         Lyon, Jeffrey A.
 7         Angov, Evelina
 8         Kumar, Sanjai
 9         Rogers, William
10         Barbosa, Arnoldo
12 <120> TITLE OF INVENTION: Expression, Purification, and Uses of a Plasmodium
13         falciparum Liver Stage Antigen 1 Polypeptide
15 <130> FILE REFERENCE: 003/285/SAP
17 <140> CURRENT APPLICATION NUMBER: 10/706,435A
19 <141> CURRENT FILING DATE: 2003-11-12
21 <150> PRIOR APPLICATION NUMBER: 60/425,719
23 <151> PRIOR FILING DATE: 2002-11-12
25 <160> NUMBER OF SEQ ID NOS: 28
27 <170> SOFTWARE: Microsoft Word XP
```

ERRORED SEQUENCES

```
       203 <210> SEQ ID NO: 5
       204 <211> LENGTH: 17
       205 <212> TYPE: PRT
       206 <213> ORGANISM: Artificial sequence
W--> 207 <220> FEATURE:
       208 <223> OTHER INFORMATION: LSA-1 Consensus sequence of 17 amino acid repeats
       209        where Xaa at position 1 is either Glu or Gly; Xaa at
       210        position 4 is Ser or Arg; Xaa at position 6 is Asp or Ser;
       211        Xaa at position 9 is Glu or Asp; Xaa at position 11 is Leu
W--> 212        or Arg; Xaa at position 13 is Lys or Asn and Xaa at position
W--> 213        15 is Lys or Thr or Arg.
       215 <400> SEQUENCE: 5
W--> 216 Xaa Gln Gln Xaa Asp Xaa Glu Gln Xaa Arg
       217                 5                 10
W--> 219 Xaa Ala Xaa Glu Xaa Leu Gln
E--> 220                 15
```

VARIABLE LOCATION SUMMARY   DATE: 09/27/2004
PATENT APPLICATION: **US/10/706,435A**   TIME: 11:39:10

Input Set : **A:\PTO.LM.txt**
Output Set: **N:\CRF4\09272004\J706435A.raw**

<u>Use of n's or Xaa's(NEW RULES):</u>
Use of n's and/or Xaa's have been detected in the Sequence Listing.
Use of <220> to <223> is MANDATORY if n's or Xaa's are present.
in <220> to <223> section, please explain location of n or Xaa, and which
residue n or Xaa represents.

Seq#:5; Xaa Pos. 1,4,6,9,11,13,15

VERIFICATION SUMMARY　　　　　　DATE: 09/27/2004
PATENT APPLICATION:　**US/10/706,435A**　　TIME: 11:39:10

Input Set : **A:\PTO.LM.txt**
Output Set: **N:\CRF4\09272004\J706435A.raw**

```
L:33 M:283 W: Missing Blank Line separator, <220> field identifier
L:35 M:283 W: Missing Blank Line separator, <400> field identifier
L:46 M:283 W: Missing Blank Line separator, <220> field identifier
L:48 M:283 W: Missing Blank Line separator, <400> field identifier
L:59 M:283 W: Missing Blank Line separator, <220> field identifier
L:61 M:283 W: Missing Blank Line separator, <400> field identifier
L:104 M:283 W: Missing Blank Line separator, <220> field identifier
L:106 M:283 W: Missing Blank Line separator, <400> field identifier
L:207 M:283 W: Missing Blank Line separator, <220> field identifier
L:212 M:259 W: Allowed number of lines exceeded, <223> Other Information:
L:213 M:259 W: Allowed number of lines exceeded, <223> Other Information:
L:216 M:258 W: Mandatory Feature missing, <221> Tag not found for SEQ ID#:5
L:216 M:258 W: Mandatory Feature missing, <222> Tag not found for SEQ ID#:5
L:216 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:5 after pos.:0
L:219 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:5 after pos.:10
L:220 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:5
L:226 M:283 W: Missing Blank Line separator, <220> field identifier
L:228 M:283 W: Missing Blank Line separator, <400> field identifier
L:239 M:283 W: Missing Blank Line separator, <220> field identifier
L:241 M:283 W: Missing Blank Line separator, <400> field identifier
L:251 M:283 W: Missing Blank Line separator, <220> field identifier
L:253 M:283 W: Missing Blank Line separator, <400> field identifier
L:263 M:283 W: Missing Blank Line separator, <220> field identifier
L:265 M:283 W: Missing Blank Line separator, <400> field identifier
L:277 M:283 W: Missing Blank Line separator, <220> field identifier
L:279 M:283 W: Missing Blank Line separator, <400> field identifier
L:292 M:283 W: Missing Blank Line separator, <220> field identifier
L:294 M:283 W: Missing Blank Line separator, <400> field identifier
L:302 M:283 W: Missing Blank Line separator, <220> field identifier
L:304 M:283 W: Missing Blank Line separator, <400> field identifier
L:315 M:283 W: Missing Blank Line separator, <220> field identifier
L:317 M:283 W: Missing Blank Line separator, <400> field identifier
L:325 M:283 W: Missing Blank Line separator, <220> field identifier
L:327 M:283 W: Missing Blank Line separator, <400> field identifier
L:339 M:283 W: Missing Blank Line separator, <220> field identifier
L:341 M:283 W: Missing Blank Line separator, <400> field identifier
L:352 M:283 W: Missing Blank Line separator, <220> field identifier
L:354 M:283 W: Missing Blank Line separator, <400> field identifier
L:365 M:283 W: Missing Blank Line separator, <220> field identifier
L:367 M:283 W: Missing Blank Line separator, <400> field identifier
L:376 M:283 W: Missing Blank Line separator, <220> field identifier
L:378 M:283 W: Missing Blank Line separator, <400> field identifier
L:389 M:283 W: Missing Blank Line separator, <220> field identifier
L:391 M:283 W: Missing Blank Line separator, <400> field identifier
L:400 M:283 W: Missing Blank Line separator, <220> field identifier
L:402 M:283 W: Missing Blank Line separator, <400> field identifier
L:413 M:283 W: Missing Blank Line separator, <220> field identifier
L:415 M:283 W: Missing Blank Line separator, <400> field identifier
```

VERIFICATION SUMMARY   DATE: 09/27/2004
PATENT APPLICATION: US/10/706,435A   TIME: 11:39:10

Input Set : **A:\PTO.LM.txt**
Output Set: **N:\CRF4\09272004\J706435A.raw**

```
L:425 M:283 W: Missing Blank Line separator, <220> field identifier
L:427 M:283 W: Missing Blank Line separator, <400> field identifier
L:438 M:283 W: Missing Blank Line separator, <220> field identifier
L:440 M:283 W: Missing Blank Line separator, <400> field identifier
L:448 M:283 W: Missing Blank Line separator, <220> field identifier
L:451 M:283 W: Missing Blank Line separator, <400> field identifier
L:464 M:283 W: Missing Blank Line separator, <220> field identifier
L:466 M:283 W: Missing Blank Line separator, <400> field identifier
L:508 M:283 W: Missing Blank Line separator, <220> field identifier
L:510 M:283 W: Missing Blank Line separator, <400> field identifier
L:610 M:283 W: Missing Blank Line separator, <220> field identifier
L:612 M:283 W: Missing Blank Line separator, <400> field identifier
L:620 M:283 W: Missing Blank Line separator, <220> field identifier
L:622 M:283 W: Missing Blank Line separator, <400> field identifier
```